Russian Journal of General Chemistry 1996 vol.66 N3, pages 484-487

# Influence of External and Internal Pressures on the Rate of the Diels-Alder Reaction of 9,10-Dimethylanthracene with Acrylonitrile

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## Abstract

Rate constants are determined for the Diels - Alder reaction of 9,10-dimethylanthracene with acrylonitrile in a number of solvents and in a diethyl ether solution of lithium perchlorate at 25°C, as well as in acetonitrile at pressures up to 4000 atm at 30°C. The activation volumes -22 ± 2 and -18 ± 1 cm3 mol-1 are calculated from the dependence of the reaction rate constant on the internal and external pressures, respectively. The experimental activation volumes are equal to the intrinsic term of the activation volume of a Diels - Alder reaction (-20 cm3 mol-1), which enables the reaction studied to be considered as a model of a nonpolar cycloaddition.